The American College of Cardiology’s (ACC) Annual Scientific Session brings together leaders in the field of clinical cardiology from around the world to discuss the latest science and research related to cardiovascular disease. With almost 12,000 attendees and more than 250 reporters representing over 20 countries at ACC 19, abstracts and cases presented at this conference have significant global impact. ACC this year brought together leaders in the field of clinical cardiology from around the world to discuss the latest science and research related to cardiovascular disease. With almost 12,000 attendees and more than 250 reporters representing over 20 countries at ACC 19, abstracts and cases presented at this conference have significant global impact. ACC this year started off with the Simon Dack Keynote lecture by Dr Canessa on the topic Don’t Let a Tragedy Dictate Who You Are. Dr Canessa, a paediatric cardiologist in Montevideo, Uruguay discussed the importance of working towards the same objective, always in mind the bigger picture in cardiology. At age 19 years, he endured a plane crash in the Andes Mountains that killed 29 people and left him stranded in the middle of nowhere. Over 72 days he had to face the harshest of weather, resorted to cannibalism in order to feed himself and hiked for 10 days in the Andes in search of help for himself and the other survivors. However, he did not let tragedy dictate his life and delivered a clear message about the importance of hope, endurance, and the spirit of cooperation in pursuit of a successful and fulfilling life (https://www.acc.org/latest-in-cardiology/articles/2019/03/08/15/32/simon-dack-keynote-dont-let-a-tragedy-dictate-who-you-are-acc-2019).

Day 1 at ACC 19 included the anticipated Apple Heart study which highlighted the role of technological advancement in cardiology to potentially identify health problems. The Apple Watch and corresponding Heart Study application used photoplethysmography to intermittently measure blood flow activity and detect subtle changes in the form of a tachogram which in turn help in identifying irregular heartbeats. Detection of repeat tachograms of an irregular pulse triggered a notification via the application which then prompted the study participant to contact the study doctor in order to determine if the participant should wear an electrocardiogram (ECG) patch. The primary endpoints were atrial fibrillation (AFib) >30s on ECG patch and simultaneous AFib on ECG patch and tachogram. A pulse notification was received by 0.52% of the study participants. Notification rates were most frequent (slightly >3.0%) in older participants over age 65 years and lowest (0.16%) in younger participants under age 40 years, respectively. AFib was identified in 34% of those who wore the ECG patch and received a pulse notification, thus potentially indicating a need for follow-up clinical evaluation in those patients (https://www.acc.org/latest-in-cardiology/articles/2019/03/08/15/32/sat-9am-apple-heart-study-acc-2019).

Depression is a common risk factor among patients hospitalized for heart failure.1 Day 1 at ACC ended with two depression trials, including the Hopeful Heart trial which showed that collaborative care (involving multiple sub-specialties) for heart failure and depression was superior at improving quality of life when compared with usual care among patients recently hospitalized for heart failure. Concurrent with quality of life improvement, enhancement in mood symptoms was also seen; however, no difference in readmissions and mortality within 12 months was found between the two groups (https://www.acc.org/latest-in-cardiology-clinical-trials/2019/03/15/13/42/hopeful-heart). The second depression trial, the CODIACS-QOL trial, aimed to evaluate depression screening compared with no screening in recent acute coronary syndrome patients. Depression screening failed to improve quality-adjusted life-years or depression-free days in post-acute coronary syndrome patients with no prior history of depression (https://www.acc.org/latest-in-cardiology-clinical-trials/2019/03/15/13/42/codiacs-qol).

The highlight of ACC 19 was Day 2, with the presentation of two of the most anticipated trials, PARTNER 3 and Evolut Low Risk, both of which received a standing ovation. These trials explored the utility of transcatheter aortic valve replacement (TAVR) in low surgical risk patients. While the PARTNER 3 trial using the SAPIEN 3 system (Edwards Lifesciences) showed that in low-risk patients, TAVR was superior to surgical aortic valve replacement (SAVR) at reducing death, stroke, or rehospitalization at 1 year2; the Evolut Low Risk trial using the self-expanding valve (CoreValve/Evolut R/Evolut PRO; Medtronic) showed that TAVR was non-inferior to SAVR for mortality/disabling stroke at 24 months for treatment of severe symptomatic aortic stenosis in low-risk patients.3 Both of these trials build on prior literature showing TAVR to be non-inferior or even superior to SAVR in high and intermediate surgical risk patients.4,5 However, long-term follow-up will be essential in order to understand the long-term durability of the valves including structural valve degeneration and the risk of subclinical leaflet thrombosis. 'This is a historic moment, and of all of us here should remember it as such', proclaimed Dr Braunwald, MD, Brigham and Women’s Hospital, Boston, MA, during the discussion panel immediately following presentation of the trials (https://www.medscape.com/viewarticle/910515).

Another interesting study highlighted was the MOMENTUM trial. Left ventricular assist systems are increasingly employed in patients with...
advanced heart failure, and concerns about device durability because of pump thrombosis have emerged. The MOMENTUM trial showed that among patients with advanced heart failure, use of the HeartMate 3 centrifugal-flow pump was superior at improving survival free from disabling stroke or reoperation to replace or remove a malfunctioning device compared to the HeartMate II axial-flow pump. Interestingly, overall survival was similar between the groups.\(^7\) (https://www.acc.org/latest-in-cardiology/clinical-trials/2019/03/15/14/26/momentum-3-final-report).

Day 3 at ACC highlighted the notable SAFARI-STEMI trial, which evaluated whether radial access was superior to femoral access in primary percutaneous coronary intervention in ST-elevation myocardial infarction (STEMI) patients. While the study was terminated early due to futility, radial access vs. femoral access was not associated with any of the ischaemic outcomes or a reduction in 30-day mortality. These results suggest similar profiles of radial and femoral access in terms of safety and study outcomes. Interventional cardiologists and catheterization laboratories need to weigh the pros and cons of radial vs. femoral access, so that either access site can be utilized safely, when appropriate (https://www.acc.org/latest-in-cardiology/clinical-trials/2019/03/16/23/57/safari-stemi).

The ACC 19 ended with the Braunwald Keynote lecture by Dr. Ridker, MD, MPH, FACC, and director of the Center for Cardiovascular Disease Prevention at Brigham and Women’s Hospital in Boston, MA on the topic Epidemiology and Population Biology Vital to CANTOS, Understanding Inflammation. The release of the CANTOS clinical trial in 2018 provided concrete evidence that inflammation plays a key role in the development of atherosclerosis and that lowering inflammation without lowering cholesterol can substantially reduce rates of non-fatal myocardial infarction, non-fatal stroke, and cardiovascular death at follow-up.\(^8\) Furthermore, inflammation lowering benefits were associated with dose-dependent reduction in hospitalization for heart failure and the composite of hospitalization for heart failure or heart failure-related mortality.\(^9\) This series of papers is a perfect culmination for translational research linked to Dr. Braunwald’s 1956 paper titled C-Reactive Protein in the Serum of Patients with Congestive Heart Failure (https://www.acc.org/latest-in-cardiology/articles/2019/03/08/26/42/brauwald-keynote-epidemiology-and-population-biology-vital-to-cantos-understanding-inflammation-acc-2019).

The CANTOS study demonstrated that inflammation plays a key role in the development of atherosclerosis by targeting inflammatory pathways to reduce high inflammatory risk for coronary artery disease beyond traditional cardiovascular risk factors.\(^9\) Recent advances in the field of inflammation highlighted that benefits seen in CANTOS could be in part due to favourable coronary plaque modulation with anti-inflammatory therapy (anti-tumour necrosis factor alpha, anti-interleukin 17, and anti-interleukin 12/23 drugs) in patients with psoriasis.\(^10\) Early investigation has hinted that improvement seen in luminal coronary plaque in these psoriasis patients could be due to direct anti-inflammatory effect on perivascular coronary inflammation.\(^11\)

Recent position paper from European Society of Cardiology Working Group elucidated the importance of lipid-inflammation cross talk in the development of atherosclerosis.\(^12\)

Most lipid-lowering therapies share anti-inflammatory and immunomodulatory properties beyond decreasing cholesterol through different mechanisms, and the anti-inflammatory response to lipid-lowering may be relevant to predict the effect of treatment.\(^13\) Efforts to perform comparative studies of further lowering, anti-inflammation, and anti-hypertension by both using surrogates for both lipid metabolism and inflammatory biomarkers/vascular inflammation imaging to identify overlapping effects should be performed. Finally, inflammation has started to gain traction in the field of cardio-oncology as inflammation participates in the pathogenesis of both cancer and cardiovascular disease.\(^14\) In fact, modulation of inflammatory pathways may prove transformative in the treatment of cancers as well as reduce the risk of cardiovascular events.\(^14\)

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